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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,005	02/14/2005	John Donohue	252390US6YAPCT	7916
22850 7590 02/28/2011 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER BERMAN, JASON				
ART UNIT		PAPER NUMBER		
1724				
NOTIFICATION DATE		DELIVERY MODE		
02/28/2011		ELECTRONIC		

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* JOHN DONOHUE and  
HONGYU YUE

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Appeal 2010-004489  
Application 10/500,005  
Technology Center 1700

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Before ADRIENE LEPIANE HANLON, KAREN M. HASTINGS, and  
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

Appellants appeal under 35 U.S.C. § 134 the final rejection of claims 1-24. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

Appellants' invention is said to be directed to a method of fault detection for material processing systems and a system therefor (Spec. para. 2).

Claims 1 and 23 are illustrative:

1. A method of material processing, the method comprising:

characterizing a process, said characterizing comprising measuring a process performance parameter at a plurality of positions on a sample and transforming the measurement data into at least one spatial component in spectral space to identify a measured signature of said process, wherein said measured signature comprises the at least one spatial component in spectral space;

optimizing said process, said optimizing comprising identifying a reference signature of said process; and

comparing said measured signature of said process with said reference signature for said process, wherein said comparing comprises determining a difference signature representing a difference between the measured signature and reference signature, and determining a process fault by comparing said difference signature with a threshold, wherein said process fault occurs when said threshold is exceeded.

23. The method according to Claim 1, further comprising identifying whether a process variation is global or local based on the signature of spatial components.

Appellants appeal the following rejections (App. Br. 5):

1. Claims 1-6, 8, 9, 12-15, 23, and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Flamm (U.S. Patent 5,711,849 issued Jan. 27, 1998) in view of Gerrish (U.S. Patent 5,770,922 issued Jun. 23, 1998).
2. Claims 1-5, 10-15, 23, and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Farber (U.S. Patent 6,232,134 B1 issued May 15, 2001) in view of Gerrish.

Regarding rejections (1) and (2), Appellants argue the same features of independent method claim 1 and system claim 14, and dependent method claim 23 and system claim 24 only (App. Br. 6-16).

## ISSUE

### *Claims 1 & 14*

Did the Examiner reversibly err in determining that Gerrish would have suggested a step of measuring and transforming or a controller capable of measuring and transforming Flamm's or Farber's data from plasma processing into spectral space to permit easier analysis and remote processing of the data? We decide this issue in the negative.

## FINDINGS OF FACT AND ANALYSIS

Appellants argue that there is no apparent reason for using Gerrish's teaching to transform into spectral space a complex waveform obtained from voltage and current samples which are input into a plasma chamber in order to manipulate Flamm's or Farber's data which is directed to different aspects of the plasma etch process (App. Br. 8 & 10). Appellants contend that the

Examiner's asserted combination of Gerrish's data analysis with either Flamm's or Farber's process or system is arbitrary and not supported by a rational reason to make the modification (*id.*).

Contrary to Appellants' argument, the Examiner relies on a teaching in Gerrish that Fourier Transform analysis allows for higher accuracy and allows for the data to be more easily exported and monitored remotely as providing a reason for modifying the teachings of Flamm or Farber to arrive at the claimed invention (Ans. 17 & 18). Appellants do not specifically challenge this reason for modifying Flamm or Farber.

Appellants' argument that the applied art does not specifically teach using Fourier Transform analysis on the surface charge distribution in Farber or the etch profile data in Flamm does not end the analysis (App. Br. 10; Reply Br. 3-4). To the contrary, the Examiner relies on Gerrish's undisputed teachings that using Fourier Transform analysis provides advantages as a reason for modifying Flamm's or Farber's processes/systems to use such data analysis.

Appellants further contend that there is no reasonable expectation of success in using Fourier Transform analysis to analyze Flamm's etch profile data or Farber's surface charge distribution data because the Examiner has not shown any particular commonalities between analysis of voltage in Gerrish and the analysis of etch profile data in Flamm or surface charge distribution data in Farber (Reply Br. 3-4). We disagree.

The Examiner has stated that as evidenced by Gerrish, Fourier Transform analysis is a known data analysis technique that provides more accurate analysis and allows the data to be exported and monitored more easily (Ans. 17 & 18). This finding comports with Appellants' admission

that those skilled in the art know how to treat unequally spaced in time (or space) data, whatever that data may represent, for conversion into Fourier (spectral) space (Spec. para. [0058]). In other words, Appellants admit that one of ordinary skill in the art would have known how to use Fourier Transform analysis to analyze data whatever that data may be.

Therefore, we determine that one of ordinary skill in the art would have had a reasonable expectation that using Gerrish's Fourier Transform analysis with Flamm's or Farber's process would have successfully resulted in more accurate process control with the data being more easily exported and monitored.

For the above reasons, we affirm the Examiner's § 103 rejections of claims 1 and 14 over Flamm or Farber in view of Gerrish.

#### *Claims 23 & 24*

#### ISSUE

Did the Examiner reversibly err in relying on Appellants' Specification as the basis for determining that the combination of the prior art would have taught or suggested the step of identifying a device programmed to identify whether a process variation is local or global based on the signature of spatial components as required by claims 23 and 24, respectively? We decide this issue in the affirmative.

#### FACTUAL FINDINGS & ANALYSIS

Appellants argue that claims 23 and 24 require "identifying" whether a process variation is local or global based on a signature of spatial components which is a deliberate action that cannot be inherent to any

analysis (App. Br. 14). Appellants contend that the Examiner impermissibly relies on paragraph 60 of their Specification as establishing that local and global variations are inherent in data analysis of Flamm or Farber in view of Gerrish (Reply Br. 4-5).

Method claim 23 requires a positive step of “identifying whether a process variation is global or local based on the signature of spatial components.” System claim 24 requires a “controller . . . capable of identifying whether a process variation is global or local based on the signature of spatial components.” Thus, claim 24 requires the controller be programmed to identify whether a process variation is global or local based on the signature of spatial components. Claims 23 and 24 both require a deliberate step or controller structure to identify any local or global variation.

With this proper claim construction in mind, we agree with Appellants that the Examiner has not established that the art teaches or would have suggested a step of or controller programmed for identifying whether a process variation is global or local based on the signature of spatial components. Rather, the Examiner impermissibly relies on the Specification as providing the teaching to identify local or global variations in spatial components. This reliance is based on impermissible hindsight.

For the above reasons, we reverse the Examiner’s § 103 rejections of claims 23 and 24 over Flamm or Farber in view of Gerrish.

Though Appellants acknowledge that dependent claims 7, 10, 11, and 16-22 are rejected on page 2 of the Appeal Brief and indicating that claims

1-24 are on appeal, Appellants do not list or otherwise argue the following rejections of these claims (App. Br. 5):

3. Claims 7, 10, and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Flamm in view of Gerrish and Angell (U.S. Patent 5,658,423 issued Aug. 19, 1997).
4. Claims 16-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Flamm in view of Gerrish and Scott (U.S. Patent 5,601,869 issued Feb. 11, 1997).
5. Claims 16-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Farber in view of Gerrish and Scott.<sup>2</sup>

Accordingly, we summarily affirm rejections (3) through (5).

#### DECISION

We affirm the following rejections:

Claims 1-6, 8, 9, and 12-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Flamm in view of Gerrish.

Claims 1-5, and 10-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Farber in view of Gerrish.

Claims 7, 10, and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Flamm in view of Gerrish and Angell.

Claims 16-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Flamm in view of Gerrish and Scott.

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<sup>2</sup> We further note that rejection (5) is not listed on page 2 of the Appeal Brief or otherwise mentioned in the Briefs. Rejection (5) is included on page 14 of the Final Office Action and page 15 of the Examiner's Answer.



Claims 16-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Farber in view of Gerrish and Scott.

We reverse the following rejections:

Claims 23 and 24 are rejected under § 103(a) as being unpatentable over either Flamm or Farber in view of Gerrish.

The Examiner's decision is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136.

ORDER  
AFFIRMED-IN-PART

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